ENGINEERING NEWS-RECORD

NOVEMBER 18, 1948

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ENR

THE CONSTRUCTION WEEK

IMPORTANT FIRST—Look for bids to be asked soon for a prestressed concrete bridge, first in the U. S. Look also for an article on it in a near-future issue of this journal. Philadelphia's department of public works has been quietly designing the structure these past several months. Of deck-girder type, it will have a center span of 160 ft., end spans of 74 ft. The largest of the girders will weigh 150 tons. Precast, they will be lifted into place 50 ft. above a drive in Fairmount Park.

TUNNELING WITHOUT EXPLOSIVES—Predictions are being made by competent persons that tunneling machines being developed for so-called "continuous" mining of coal can be extended to work in any sort of material up to medium-hard limestone. The machines cut their way into the earth, without the necessity of stopping to drill and blast; hence "continuous mining". In coal seams the machines get in and out so fast that timbering will not be necessary. Timbering might also be reduced in tunnels, the prophets say, by combining the mining machine with lining equipment.

MORE POWER FOR BRAZIL—The World Bank is ready to loan the Brazilian Traction Co., supplier of electric power to Rio de Janeiro and Sao Paulo, a total of about $75,000,000, just as soon as Brazil's congress ratifies the government guarantee required by the bank on this particular deal. The company has plenty of Brazilian cruzeiros, but needs U. S. dollars to round out its purchases in connection with proposed hydro-electric expansion of its facilities. Brazil dam building may reach the construction stage before the more publicized Argentine work.

CHEAPER WATER TREATMENT—Watch for the announcement sometime soon from an important U. S. equipment manufacturer that a new process of water clarification is available as a substitute for rapid-sand filtration. Developed by Glenfield and Kennedy, Ltd., of Great Britain, it involves micro-straining through a rotary drum screen. Patents and rights to the process have been the subject of recent negotiations in this country.

Reports indicate that micro-straining installations will cost only about one-fifth of an equivalent size sand filter. Furthermore, where a sand filter can remove only particles above 70 microns, the strainer will eliminate particles of 40 microns and even smaller. Some 12 installations have been made in Great Britain.

MOSQUITOES OUT?—Significant results may be expected from a vast operation aimed at complete eradication of malaria-carrying mosquitoes on the island of Sardinia, off the coast of Italy. Quietly sponsored by the Rockefeller Foundation, this $12,000,000 experiment—financed in large part by Italian funds set aside under the Marshall Plan—combines fully mechanized operations with the refinements of scientific control. A path to rich developments in tropical areas may be cleared by the techniques and methods perfected.

MORE WORK FOR CONSULTANTS — When Governor Driscoll of New Jersey signed a bill setting up a turnpike authority to build a toll highway across the state, he said he wanted quick action. He'll apparently get it by turning over the bulk of the turnpike work to private consultants—since the bill authorizes employment of consulting engineers, and the highway department is already farming out some of its design work.

CODE—A model state law permitting municipalities to adopt existing standards into their building codes by reference is now up for approval by the Board of State Governments. Prepared by the Housing and Home Finance Agency, and reviewed by the Department of Justice, the model law is aimed at promoting use of performance-standard building codes. It will require that communities have copies of the code and related documents available at all times; and require local building officials to report annually on changes that should be made to keep the codes up to date.

MORE WATERWAYS?—One result of the basing-point price decision is a heightened interest in inland water transportation. One steel company has already found a greater tonnage of its product being moved by water as consumers seek means of reducing transportation costs. The trend might bring greater emphasis on the benefits to navigation in studies of the economics of multiple-purpose dam projects.

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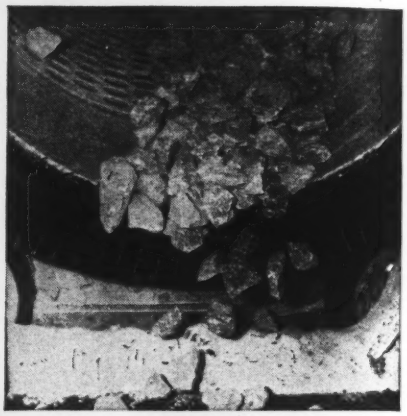

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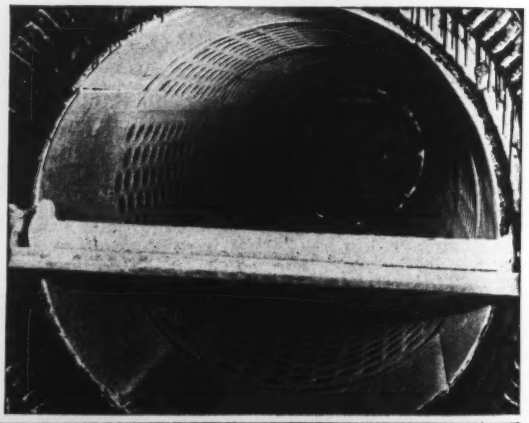

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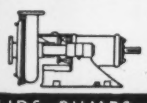

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ENGINEERING NEWS-RECORD

NOVEMBER 18, 1948 VOL. 14[illegible] NO. 21

Construction lacks appeal for engineering graduates

Survey of civil engineering schools indicates supply of trained men will be sufficient within four years, but emphasizes drift of graduates out of building field

By E. E. Halmos, Jr.

Within the next four years, more than 17,000 civil engineering graduates will become available to industry, via 95 major U. S. engineering schools. Whether these men will fill the needs of the construction industry is a question to which the answer is not yet clear.

Two conclusions, however, appear warranted:

1. The schools will supply enough trained men.

2. Not enough of these men will stay in the civil engineering and construction field to meet its needs unless jobs in that field are made more attractive—salary-wise and on a personal-satisfaction basis.

In an attempt to check the "source of supply" for trained technical personnel—a shortage of which was shown up in an earlier survey (*ENR* Sept. 9, p. 1)—*Engineering News-Record* asked the deans of 95 U. S. engineering schools for figures on their registrations and graduations, and for opinions on certain trends. Construction industry leaders were also questioned.

Shortage is war-caused

The results are a complex cross-section of a vastly diversified field, and reflect the virtual impossibility of generalizations for the construction industry as a whole.

But it can be fairly stated that the current shortage of trained personnel is principally a fault of the wartime drainage of college-age manpower. During the last three years—counting back from June, 1948—the 95 colleges and universities graduated a total of 7,158 civil engineering students. Their present senior classes still reflect the "supply" shortage—these classes are in general considerably smaller than the classes following. Most observers believe that the present senior class represents nearly the last of the veterans who left the armed services immediately after the end of the war.

The bulk of the present registration of 21,018 now in the 95 civil engineering schools checked will begin to become available a year from now, since most of the schools report their heaviest concentration of students in the sophomore and junior years.

The present freshman class now contains a lessening proportion of veterans, and an increasing number of men who have either just reached the college age, or who were unable to enter the engineering schools earlier. Some of the heavy concentration in the sophomore and junior classes, incidentally, is also a reflection of the group who were unable to enter as freshmen because of the rush of returning veterans. Many of these students attended the various "emergency schools" set up—notably in New York and Pennsylvania—and have now entered the regular schools as sophomores and juniors.

The predicted 17,000 graduation figure is based on the fact that about 35 percent of the 21,018 enrollment reported is in the freshman class, 45-50 percent is in the middle years, and 15-20 percent in the present senior group. Educators seem agreed that the percentage of loss in any class, from its registration as freshmen to graduation, is about 40 percent, whereas the losses in the upper three years grow progressively less.

It is nearly impossible—because of the great diversity in the field—to arrive at any firm figure that would show annual demand for engineers. But graduates at the rate of about 3,000 in 1948-49; and 4,000 and 5,000 in the succeeding years would apparently fill the major gaps.

Fifty-five of the educators looked for a continuing increase in enrollment over the next 10 years; 23 thought enrollments would decrease, starting within about three years, and 17 foresaw little change in enrollment rates.

The most significant fact, however, is contained in the answer to the question: "How many of your graduates remain in the construction industry after graduation?"

Although the answers—many of them based on long experience rather than actual figures—ranged from 10 percent to 87 percent, the average settled at about 25 percent.

Partial explanations are many. Among them are low starting salaries and slow advancement; a fear of insecurity of employment; the fact that many students take civil engineering courses as the best possible training for general business careers; and the trend by industry to draw on

(*Continued on p.* 15)

State OK's parallel S.F. Bay bridge

Construction of a $155 million bridge across San Francisco Bay, paralleling the existing Bay bridge, was recommended by the California Division of Bay Toll Crossings in a report released Nov. 16.

The division report, signed by R. A. Tudor, chief engineer, was presented to the California State Toll Bridge Authority after feasibility studies and cost analyses of the parallel crossing and of a combined causeway-tunnel project approved by an Army-Navy board nearly two years ago (ENR Feb. 13, 1947, vol. p. 237).

Urging the construction of the new bridge "at the earliest practicable date", Mr. Tudor's report estimated that the cost of the causeway-tunnel project would be more than $178.4 million, although estimates on the structures presented at the end of the Army-Navy hearings indicated it would cost about $261 million.

Because of limited available revenue bond money, the state is expected to settle on only one of the two proposals.

The Toll Bridge Authority will hold public hearings on the recommendation and is expected to make a final decision within the next two months. A full account of the bridge report will appear in the Nov. 25th issue of Engineering News Record.

NEWS BRIEFS

Industrial Construction—The Texas-Empire Pipe Line Co. will build 214 miles of crude oil pipe line between *Patoka, Ill.*, and *East Chicago, Ind.*, to cost about $10,000,000. . . . Work is to be started by the Atlantic Pipe Line Co. early next year on a 10-inch, 283-mile, $10,000,000 oil pipeline from *Crane County, Tex.*, to *Refugio, Tex.* . . . A committee of engineers is studying a plan for a $14,000,000 union railroad station at *Quebec, Que.* . . . Materials Service Corp. is planning to add three stories to the 19-story Mercantile Exchange Building, *Chicago*, at a cost of $1,000,000. . . . Foundation work has started on what ultimately will be a $40,000,000 plant of the Phillips Chemical Corp. on the ship channel at *Houston, Tex.* . . . Jones & Laughlin Steel Corp. plans to complete a $70,000,000 expansion program by 1951. It will include six giant open hearth furnaces in *Pittsburgh*, and finishing and tinning facilities at *Aliquippa, Pa.* . . . The Permanente Cement Co. is planning to build a cement plant near *Helena, Mont.*, to cost $6,000,000. . . . Construction of a $13,000,000 solvent refining plant at *Lima, Ohio*, has been authorized by The Standard Oil Co. (Ohio). This is in addition to the $16,000,000 modernization and expansion program already under way at Lima. . . . The Georgia Power company is doubling the initial installation of the new Yates steam-electric generating station on the Chattahoochee River, 40 miles south of *Atlanta, Ga.* . . . Estimate of the cost of the new generating plant of the Public Service Co. of Indiana at *Riverwood, Ind.*, has been raised to $14,000,000. . . . Sun Oil Co. has started a $6,000,000 refinery equipment building addition at *Toledo, Ohio*. . . . Philip Carey Mfg. Co., Lockland, Ohio, will build a $2,700,000 plant at *Plymouth Meeting, Pa.* . . . A $30,000,000 expansion has been completed at the plant of the Columbia Steel Co. at *Pittsburgh, Calif.*

Housing—A multi-million dollar housing and commercial project is being planned for *Coral Gables, Fla.*, by David M. Woolin. There will be 500 apartment units, a half mile of commercial building, and parking for 2,750 cars. . . . At Broadmoor Village in a *San Francisco* suburb Stoneson Bros. have built more than 900 homes and are planning a $1,000,000 shopping center. . . . Richard A. Warner will build a $1,400,000 home development at *Upper Moreland, Pa.* . . . M. A. Sarshik will build a $1,000,000 apartment development at *Bridgeton, N. J.* . . . New Type Homes Co., *West Chester, Pa.*, will build home developments costing more than $1,000,000. . . . Hartel Homes, Inc., *Philadelphia, Pa.*, will carry out a $2,000,000 residential development.

Water Supply and Sewers—Fourteen sewage disposal plants in *New Mexico* are being planned, it has been announced by W. H. Cheney of the Federal Works Agency's Bureau of Community Facilities. . . . Cost of filtration plant extension, a high service pumping station, and appurtenant work at *Allentown, Pa.*, is estimated at $1,980,000. . . . On Nov. 20, voters of *Dallas, Tex.*, will decide whether or not to approve a $22,400,000 bond issue for sanitary and storm sewers, and water system expansion. . . . *Montreal, Que.*, is considering expenditure of $10,000,000 for waterworks and sewer improvements . . . In *Buffalo, N. Y.*, General Manager Frederick W. Crane places the cost of the city's sewer needs at between $50,000,000 and $60,000,000. The Lake Erie cooling water project is nearing realization, as the five major industrial companies involved in the projected purification of the Buffalo River are in agreement with the project in principle.

Dams—At *Ft. Worth, Tex.*, directors of The Brazos River Conservation and Reclamation District voted to start specific plans for constructing and financing four dams estimated at $25,000,000. This power development will be bond-financed without federal aid. . . . Clark Hill Dam on the Savannah River in *Georgia* is ready for construction and should be completed during 1952. Congress has already approved $18,000,000 for the project. . . . Contracts will be let next year on $17,000,000 Cachuma Dam, a rolled earth structure on the Santa Ynez River north of *Santa Barbara, Calif.* . . . First-stage construction on the Corps of Engineers' Blakely Mountain reservoir, flood-control and electric power project on the Ouachita River near Hot Springs, Ark., includes two parallel 1,600-ft. diversion tunnels being driven simultaneously from downstream portals.

Public Construction—Plans for rehabilitating eight schools at a cost of nearly $4,000,000 have been prepared by *Toronto, Ont.* . . . *Indiana* reportedly needs an additional 8,000 hospital beds at an estimated cost of $120 million. . . . The University of Wisconsin has been granted authorization to build a $3,000,000 engineering building.

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The Cover

Advising governments on how they should spend their construction money is no new task for Clifford S. Strike.

Head of Overseas Consultants, Inc., which has been engaged to tell the government of Iran how much it should spend — and on what — to bolster its economy (*ENR* Oct. 28, p. 73), Strike has also been adviser on engineering-economic matters to the governments of New Zealand and China.

At the end of the war, he advised the U. S. government on how to house defeated Germany—and carried through his own program with great success. With the other blue-chip members of Overseas Consultants he later outlined a program for the rehabilitation of Japan's economic potential.

President of the engineering combine, he is also president of F. H. McGraw and Co., of Hartford, Conn. and New York City. Hard driving, an "engineer's engineer", 46-year-old Cliff Strike has a B.S. degree from the University of Illinois, which he acquired in 1924. After moving around construction jobs for the old Dwight P. Robinson Co. until 1930, he joined F. H. McGraw, who had recently left the Robinson firm to form his own company. He became head of the new firm in 1941.

Under his leadership, the company has built such major facilities as the huge Jayhawk Ordinance Plant in Kansas and the $36,000,000 Naval Air Station in Bermuda; and many a hospital, school, factory and sewage-disposal plant.

A relentless perfectionist, he believes there's no construction job that can't be done faster and better—slovenly work and ill-kept equipment get short shrift. His organization was one of the first engineering companies completely to mechanize its cost-accounting procedures.

Cliff Strike doesn't deny the opportunities abroad. But he thinks there's plenty of future for the industry at home. "We've got a real boom in hand here in the U. S.," he says. "We can keep it up, with benefit all around, if we build reasonably and plan our building properly."

Corps of Engineers reports findings in $3 billion Columbia River plan

Long awaited report asks authorization of six dams, more effective operation of existing projects, navigation improvements and levees

A "Review Report on Columbia River and Tributaries" was submitted to the Columbia River Inter-Agency Committee by the Corps of Engineers on Nov. 10.

Authorized by a U. S. Senate committee on commerce in 1943 the report was completed under supervision of Col. Theron D. Weaver, North Pacific Division Engineer.

Details of the $3 billion plan to develop the Columbia River Basin for flood control, navigation, power and irrigation, were outlined in a public notice issued Nov. 8 by the North Pacific Division Engineer's office in Portland, Ore. The plan evolved through the efforts of the offices of both the Portland and Seattle district engineers and after some 30 hearings spaced over the past 15 years in five northwestern states.

The main control plan includes the immediate authorization of the following multi-purpose dams and reservoirs:

1) Libby project on the Kootenai River in Montana,

2) Albeni Falls project on Idaho's Pend Oreille River,

3) Priest Rapids project in Washington on the Columbia River,

4) Hells Canyon project, Snake River, Oregon and Idaho,

5) John Day project on the Columbia River in Oregon and Washington, and

6) The Dalles project, also on the Columbia River in Oregon and Washington.

In addition to the authorization of these great projects, the report recommends consideration of the Glacier View project in Montana on the Flathead River.

As a part of the main control plan procedures are recommended relating to most effective operation of Grand Coulee and Hungry Horse dams of the Bureau of Reclamation.

Construction of new levees and modification of existing ones are called for to increase flood control capacities within the basin. Improvements permitting navigation between Lewiston and Lime Point, Idaho, on the Snake River are recommended.

Willamette basin development

In the Willamette River Valley the Corps of Engineers plan includes twenty multiple-purpose reservoirs, five of which now exist or are under construction. Here, too, the plan calls for levee and channel improvements and power plants. Reconstruction of Willamette Falls Locks is favorably mentioned.

Subject to requirements of local interests, the plan includes channel work on the Snake River at Moose, Wyo.; on the Umatilla River at Pendleton, Ore.; on Columbia Slough in North Portland Harbor; on the Columbia River at Westport, Ore.; and from Baker Bay to the Columbia River ship channel in Washington.

Levee protection would be extended for Bonners Ferry, on Kootenai River, Idaho. Numerous relatively small local flood protection works other than reservoirs would be built at an estimated $28,000,000, subject to approval of the Chief of Engineers and Secretary of the Army.

Associated plans

In conjunction with the main control plan there are several associated schemes recommended for Congressional approval. These include the U. S. Fish and Wildlife Service plan for a Lower Columbia River Fishery Plan, a hydrological network for the basin, necessary transmission facilities for distribution of all power produced in the area, and an adequate program of soil conservation by the Department of Agriculture.

In connection with irrigation the report endorses recommendations made last June by Secretary of the Interior Krug for a $273 million reclamation project.

Also recommended by the report is a tax loss provision, which is a departure from previous policy. Where annual tax losses actually do occur, due to the construction of dams and inundation of land, the Corps of Engineers would be authorized to recompense the state or states a sum equal to the taxes lost.

Accomplishments foreseen

Reservoirs of the main control plan would be sufficient to reduce a flood of the intensity of last spring's deluge from 1,010,000 cfs. at The Dalles to 700,000 cfs. At Portland the 1948 flood stage could be dropped from 29.95 ft. to 24 ft., according to the report.

Power installations in the main control plan would increase the present capacity by 6,000,000 kw. to a total of 11,700,000 kw.—enough to meet the forecasted load between 1960-70. The Willamette plan will add another 387,000 kw. to the federal system.

Cows discontented; Alcoa builds fluoride traps

Installations designed to trap air borne fluorides at their source are being made at the Vancouver, Wash., plant of the Aluminum Company of America at a cost of more than $1,000,000.

Improvements were ordered after claims had been made that cattle in the vicinity were being affected by fluorides from the plants pot room. The installation will include hoods over the aluminum pots to collect fluorides, along with introduction of ventilating air, and a system of fans, ducts and washing towers.

HONORARY AWWA MEMBER—Hal Peary, who, as the Great Gildersleeve on the radio, portrays a water commissioner, accepted honorary membership in the American Water Works Association at the recent California Section meeting. Linn Enslow, association president makes the presentation. Looking on are L. W. Grayson, section president, and H. E. Jordan, national secretary.

FOREIGN DEVELOPMENTS

MODEL HOMES such as these on the outskirts of Buenos Aires are part of a large scale public housing program aimed at eliminating . . .

EMERGENCY SHELTERS like this. These shacks, occupied by people who could afford better houses—if they were available, have been ordered torn down by the city since the photograph was taken.

Argentina—The government has construction under way on six large housing projects within the area of Greater Buenos Aires while a score of others have been started in various parts of the country.

While most of the projects consist of the traditional brick-with-mortar-face and tile-roof small homes, one of the developments calls for a block of 21-story apartment buildings to be built in ultra-modern style. Another project of 26 blocks of apartments is being erected in the Italian Gaburri system in which prefabricated vibrated-concrete beams, columns and slabs are used.

Altogether, about $20,000,000 worth of housing construction is actually under way while the entire long-range program will cost some $100 million.

Barrio Peron, pictured above, and now virtually completed, is a model development including 320 houses plus six multiple housing units. The houses are of one, two, three and four-family size. The development has its own theater, shopping center, church and public garage. Cost per housing unit is in the neighborhood of $15,000.

The entire Barrio Peron is built of rough red bricks on ground-level concrete bases. There are no basements in any of the project. Heavy equipment not normally used on housing projects in Argentina was employed on the job.

Housing outside city

Outside the limits of Greater Buenos Aires, fourteen of the provinces and eleven of the national territories all have their own housing projects. Many of them are fairly small, but others consist of as many as 100 units. It must be pointed out that while housing develops at a great rate, the population has increased by over 1,000,000 in the last five years, and immigrants are entering at a rate in excess of 100,000 per year from Italy and Spain.

The shortage of cement combined with labor shortages and lower output per worker has hit the private builders of the country. Thus, they are finding themselves priced out of the field, and public housing runs the race against the housing shortage that exists no less in Argentina than in most other countries of the world.

Power and Irrigation

England—The new power station at Kingston-on-Thames, the first of 25 new stations comprising the British Electricity Authority's expansion program, was opened by H.M. King George VI late last month. His Majesty set in motion the first of two 3,000-kw. turbo-alternators which comprise the first section of the station.

The new project was approved shortly before the outbreak of the war, under a 1939 arrangement between Kingston Corporation and the Central Electricity Board. However, it was not until 1944 that physical work was able to proceed.

About 5,000 tons of steel were used in constructing the main buildings. Two reinforced chimneys which flank the building are 250 ft. high with an 18-ft. inside diameter at their tops.

Over 6,000,000 gal. of water per hour will be required for cooling and other purposes when the station is working at full load. Thames River water will enter the plant at its south end and be discharged back into the river after having been circulated through the plant at the north end of the station.

Consulting engineers for the project were Preece, Cardew and Rider, and Coode, Vaughan-Lee, Frank and Gwyther were responsible for the civil engineering work.

Mexico—A $13,000,000 reservoir and irrigation development program is to be undertaken during the next six months in a semi-arid region between Tijuana and Ensenada. The program was announced by the Minister of Hydraulic Resources for the Mexican Government, Mexico City. It is one of several general improvement programs for the area south of the international border, including the $8,000,000 Morelos Dam on the Colorado River which is scheduled for completion within two years.

Inaccessibility of the area to Mexican sources of supply requires that most of the supplies and equipment be furnished from the United States.

Argentina—The first construction work has started in connection with the 500,000 kw. Salta Grande dam on the Uruguay river between Argentina and Uruguay. All studies have now been completed on both sides of the dam site and surveys have revealed favorable geological conditions.

Salta Grande, whose construction will be handled by a joint Argentine-Uruguayan commission already functioning,

will be comparable in size and structure to Dnieperstroy Dam in Russia. Design work is expected to take one to two years and construction will not likely get underway until 1950 on the dam structure itself. Construction underway at present is on a road linking the site with the nearest heavy-duty highway.

Also in Argentina the government has called for bids on the construction of Huelches dam on the Rio Colorado in the central zone of the country. An official estimate of the cost of construction is $16,000,000, and the dam will put out an estimated 62,000 kw. of power from four turbo-generators.

Australia—The New South Wales state cabinet has approved construction of a large power plant near Lake Illawarra at an estimated cost of about $15,000,000. The public works department has invited bids for the plant, which will include two 30,000-kw. turbo-generators. It is expected that the new plant will be in operation in 1952.

Airports

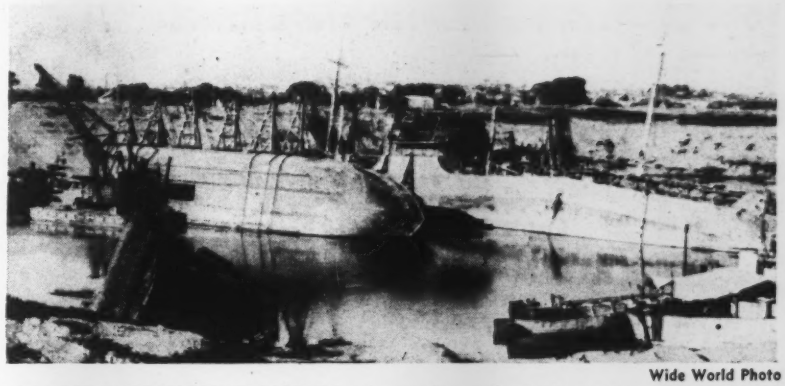
Germany—Tegel Airdrome in Berlin is expected to go into full operation about Dec. 15. This new aiport in the French sector of the city was built by Germans working with the crudest of tools in 13 weeks. It has a 5,500-ft. runway 150 ft. wide and a 2,000-ft. long unloading apron. U. S. Army Engineers directed the work, but it took 15,000 German men and women to complete the job.

Mexico—A military airbase at Santa Lucia, 30 miles from Mexico City, will be built under the direction of the Ministry of National Defense at a total cost of $8,500,000. President Miguel Aleman announced, after inspecting the site, that efforts will be made to complete the base within two years.

Italy—The Aeronautic Defense Ministry has arranged a plan for the development of Italian civil aviation. The plan provides for the following points: Building of an inter-continental airport in Rome; reconstruction of the Italian inland airport system; opening of civil schools for pilots.

Estimates place the total cost of the Rome inter-continental airport at $40,000,000. Nearly $2,000,000 of this amount would have to be spent in the United States in purchasing machinery required for the building and upkeep of the field. Present plans call for the completion of at least two runways of the project by 1950.

The Italian airport system outside of Rome suffered severe losses during the war. The plan of the Aeronautics Defense Ministry provides for completion of the rebuilding of three fields at Milan, Naples and Catania. Smaller fields would be rebuilt at sixteen additional cities. The total cost of this air transport network is estimated at about $150 million.



Wide World Photo

CLEARING FRENCH CHANNELS of vessels sunk during the war continues. Here at the mouth of the Loire near Nantes, French salvage workers raise ships sunk by the Germans to block the river. Having diked off this portion and drained it somewhat, the crew now works with cranes to right the ships.

Brazil—An aeronautical center to be located on a plateau at San Jose dos Campos, about 40 miles from Sao Paulo, will be built by the government to insure the development of civil and military aviaetion. The center, when completed, will embrace similar functions to those performed by the Civil Aeronautics Administration's experimental stations in the United States.

Facilities will include an airport with 12,000-ft. runways, modern housing and recreation facilities for 2,000 students and staff, classrooms and research facilities, including wind tunnels. Eventually, Brazil hopes that the center will provide the aeronautical engineers, research technicians and aviation economists required for the development of her aviation. At present an American staff headed by Dr. Richard Smith operates Brazil's Aeronautical Institute of Technology.

Also in Brazil, a new airport is to be built near the Paulo Affonso Falls at the junction of the Rio Sao Francisco and the Rio do Moxoto in northeastern Brazil. Three runways are planned for this airport, and it is reported that one of these will be made of wood.

Tasmania—Construction of a modern airport will start shortly near Hobart, in this island state off the southern coast of Australia. Total cost of the project will be $2,200,000, excluding cost of land. The airport will have control towers and all safety facilities will conform to the standards laid down by the Civil Airport Authority of Montreal, Canada.

Transport

England—About 1,300 miles of new track have been laid this year, and British Railway officials claim that another 600 miles have been laid during repairs. Rails which have had no overhauling in the past seven years are being lifted and replaced.

In London the Minister of Transport will open an extension of the underground on November 21. Largest improvement in London's subway system for the past 31 years, the new lines will total about nine miles. Nine new underground stations are involved, bringing the total number of stations in the system to 278; the total length of lines in the city is 243 miles.

Switzerland—Plans are being considered by Italian and Swiss engineers for a projected canal from Milan to Lake Maggiore. Such a canal would permit traffic from Adriatic ports to reach Swiss ports on Lake Maggiore without reloading.

Argentina—Contracts for over 3,000,000 dollars worth of highway construction have been approved by the Argentine Department of Public Works.

The largest item listed is the proposed construction of a new road in the lake district of the Andes Mountains near the Chilean border. This highly scenic route would cost $1,075,000 and is a part of the over-all Argentine government plan to encourage hotels and foster a tourist program in this area.

Italy—An important share of ERP funds will be used for reorganization of railway communications between Genoa and Central Europe, the Italian Minister for Transport announced recently.

Fourth jurisdictional dispute settled

The National Joint Board for settling jurisdictional disputes in the construction industry announced its fourth decision recently. Unanimous, as were the others, it gave the operation of gasoline-driven electric generators for welding to members of the International Union of Operating Engineers (ENR SEPT. 30, P. 44).

This decision settles a dispute between the operating engineers and the plumbing & pipefitters union and will serve as a precedent applicable to future disputes on the same issue.

The five-man joint board, headed by impartial chairman John T. Dunlop, had to decide which of two precedents applied in this case, which was filed with the joint board by the Philadelphia Chapter of the Associated General Contractors and the Turner Construction Co. The dispute between the two unions occurred on a Turner Construction job on the Yale & Towne Co. plant in Philadelphia.

In favoring the operating engineers, the joint board held that the dispute is covered by resolution 124 of the American Federation of Labor Convention in Norfolk, Va., in 1907. That resolution stated that the engineers have jurisdiction over "the motive power of all derricks, cement mixers, hod hoists, pumps and other machines used on construction work."

However, it is understood that William E. Maloney, president of the operating engineers, is advising union business agents and the AFL building trades that it will not assert its jurisdiction over these engines when there is only one of them on a job and its size is less than 400 amperes. In the past, on an informal basis, Maloney often has waived jurisdiction in such situations.

If this happens, it will mean some saving to contractors. The plumbers & pipefitters testified at the hearing that on 90 percent of its jobs there is only one engine.

Representatives of the heating, piping & air conditioning industry intervened on the side of the plumbers & pipefitting union at hearings before the board.

The jurisdictional disputes agreement between the AFL and the construction industry continues for one year beyond Dec. 31, unless either side gives notice by Dec. 1 of a desire to change or terminate it.

Some sources close to the joint board felt that the election results probably strengthened the future of the board because it will stand as a possible substitute for legislation against jurisdictional disputes in any new labor law. President Truman is on record against strikes over jurisdictional issues.

PERSPECTIVE . . . .

What is a strike?

Mass quitting of work is "persuasive evidence" of a strike if there is no contrary explanation of the occurrence.

Such interpretation of the Taft-Hartley definition of a strike is given by a National Labor Relations Board trial examiner in the first ruling on this point to come from NLRB.

The ruling conforms to the view taken by the federal district court at Knoxville, Tenn., but is likely to be reviewed by the full five-man NLRB at the request of the International Brotherhood of Electrical Workers (AFL).

The issue will be academic, of course, if the 81st Congress modifies section 501 (2) of the Taft-Hartley Law, which defines a strike as including "any strike or other concerted stoppage of work by employees." The Wagner Act did not give any definition.

The case involves Roane-Anderson Co., which maintains and operates the electrical distribution system for the Oak Ridge Townside and atomic reservation under contract with the Atomic Energy Commission. All but one of the 115 maintenance electricians and utility linemen employed by Roane-Anderson left their jobs on July 29 and 30 after the Kiser Electric Co. of Knoxville, a non-union subcontractor, began installing fluorescent fixtures in a school building.

Most of them remained away until Sept. 2 when Federal Judge George C. Taylor—at the request of NLRB General Counsel Robert N. Denham—issued an injunction forbidding the IBEW to continue a strike seeking to force a secondary boycott against Kiser. The injunction is effective until NLRB decides whether the union is guilty of a secondary boycott—an unfair labor practice.

The examiner, Arthur Leff, rejected the assertions of 13 employees who testified that they quit as a result of individual decisions. The union pointed to section 502 of the Taft-Hartley Law, which states that nothing in the law shall "be construed to make the quitting of his labor by an individual employee an illegal act."

Leff said that, although most of the men quit after they had reported for work or in mid-shift, they were unable to point to any specific incident arising at that time which prompted them to decide individually to quit.

Although the IBEW, which holds a contract with Roane-Anderson, did not formally call a strike or conduct a strike vote, Leff said its responsibility for the stoppage was proved by evidence of 10 instances of inducement, direction and encouragement by union officials who were acting as agents of the union.

It was mandatory for Denham to seek the injunction without delay after he found grounds for Roane-Anderson's charges of secondary boycott against the IBEW. The law requires such action in secondary boycotts. This feature of the law has particularly been criticized as unfair by union leaders because it does not provide for any mandatory injunctions against management.

PRA head warns Georgia on federal aid road work

Thomas H. MacDonald, U. S. commissioner of public roads, has served notice on Georgia that further federal aid highway funds will be withheld until the state assures the federal government that approximately $11,000,000 of current contracts "will be completed in accordance with terms of the contracts."

A legal technicality has resulted in court injunction to halt federal and state highway projects in Georgia (ENR OCT. 28, P. 74).

Mr. McDonald says that the government will expect the state to complete federal aid projects for which contracts have been awarded.

State Highway Director John Beasley expressed regret that the roadbuilding program has been interrupted by the taxpayers' suit. He indicated that the state stands to suffer great loss in halting of the work and that contractors may sue the state for possible damages.

Some relief was gained when Judge C. W. Worrill exempted from the injunction nine federal-aid projects on which contracts had been let prior to Aug. 3.

A-bomb radiation effects overstressed Army medico tells APHA convention

Sanitary division of American Public Health Association hears of need for "hard-boiled" attitude toward bomb—Wolman receives top award

The effects of radiation resulting from an atom-bomb burst have been over-emphasized in the public mind and have clouded the thinking of officials who would be concerned with the protection of communities in the event of attack. Fire would be a much more dangerous result of an A-bomb burst than radiation, Col. James P. Cooney, chief of the special projects division of the office of the Surgeon General of the Army, told members of the American Public Health Association at the organization's 76th annual meeting at Boston.

Speakers at the four-day session took up the many problems created by new housing developments, stream-pollution clearance and other matters. The Sedgwick Award for distinguished public health service was presented to Abel Wolman of Johns Hopkins University.

Prefacing his remarks with the statement that he had every respect for the phenomenon of radioactivity as an instrument of death, Col. Cooney told his audience that a "hardboiled" attitude toward the subject is justified.

"The atomic bomb," he said, "was developed as a blast weapon, and was so used. The radiation effect was never considered to be the prime component of its effectiveness . . . the destruction attendant to the blast heat and fires was paramount.

Fire is first problem

"I have appeared before local defense agencies in many cities. They are preparing for defense against atom-bomb attack . . . universally they are thinking of radiation. They ask when they'll be able to get Geiger counters. But Geiger counters are not their only problem—firefighting equipment is many times more important, as are well-organized rescue squads.

"Hiroshima and Nagasaki disprove . . . the statement that rescue squads can't go into a bombed area to rescue the wounded. The residual radiation from an air burst of the bomb is insignificant.

"The significant prompt radiation occurs in a matter of microseconds and does not extend beyond a 2,000-yd. distance. Immediately after such a detonation, it is perfectly safe to enter a bombed area and rescue the . . . injured.

"How about an underwater or ground burst? In such cases, the radiation hazards would be proportionally decreased.

"Much has been written about poisoned water," Col. Cooney continued. "In case the water supply of a city is contaminated . . . all the evidence at hand at present indicates that after passing through a modern filtration plant, the water at the tap would be safe to drink. More work will be done to prove or disprove this statement."

Addressing another session, Dr. Wolman attacked the theory that the sanitary engineers and public health officials can "bask in the glory" of past achievements. "Although great strides have been made, more remains to be done in the next century than was done in the previous one in the field of control of man's environment," he said.

"There is hardly a city in the United States in which conditions are not essentially worse than those of 1850. There is not a city—with pathetically few exceptions—in which conditions of atmosphere are not immeasurably worse today than they were. The past ten years have seen a major deterioration in the provision of water supply and sewage facilities in our metropolitan areas—houses have been built that promise to become slums in the not too distant future."

Other speakers included: C. E. A. Winslow, editor of the AMERICAN JOURNAL OF PUBLIC HEALTH; Emil A. Tibeni, special consultant to the United States Public Health Service; Louis I. Dublin, vice-president of the Metropolitan Life Insurance Co.; Miss Catherine Bauer, of Cambridge, Mass.; John M. Henderson, professor of sanitary science at Columbia University, N. Y.; and Irving H. Borts, director of the Iowa State Hygienic Laboratory.

More power from Niagara proposed in Ontario

More efficient use of Canada's share of the Niagara River water is soon to be undertaken, according to Robert H. Saunders, chairman of the Ontario Hydro-Electric Power Commission. The work will cost about $150 million.

At present, the water diverted from the river above Niagara Falls on the Canadian side is divided between three old plants at the Falls, which develop a head of about 200 ft., and the newer plant down at Queenston, where 580,000 hp. is generated in a plant developing 315 ft., of the entire 336-ft. drop between Lake Erie and Lake Ontario.

Under the plan now proposed, the three old plants at the falls would be closed and the water they now use would be diverted through a tunnel and canal to a new plant down at Queenston. At that point the same amount of water can be used to develop 380,000 hp. more than is now produced in the old plants.

This plan cannot be consumated without the cooperation of the Niagara-Hudson Power Co., which owns one of the three old plants on the Canadian side, nor without approval of the International Joint Commission, which has jurisdiction over the Niagara water.

Combined bid is low on Detroit sewer contract

Four contractors, bidding under the name of Allied Contractors of Detroit, were awarded a contract recently for Detroit's four-unit, stormwater relief sewer project on their low bid of $8,369,700. The four companies are: S. A. Healy Co.; Gargaro Co.; Candler & Bass; and Mancini-Miller Thompson Co.

Although the 18,690 ft. of large-diameter sewers contained in the project, had been divided into four units (ENR SEPT. 30, P. 70) to permit bidding on any unit or any combination of units, the Allied Contractors submitted only one combined bid, covering all four units. Their bid was slightly below the engineers' estimate and $550,600 below the lowest combination of bids submitted by other contractors on the four individual units.

The six other contractors submitted a total of 14 bids, either on single units or on various combinations.

Where two contractors offered both combined and individual bids on two units, the combined bids were $150,000 and $60,000, respectively, below the sum of the two individual bids. This indicates that economies sometimes may be effected on large sewer jobs by offering substantial portions of the work to larger contractors or combinations of contractors. At the same time, the fact that three contractors offered bids on only one unit each—the lowest of which was $1,728,000—indicates the advisability of breaking down large projects into units small enough to attract individual contractors.

Final decision has not been made to date as to what type of sewer—concrete arch, precast concrete pipe, or reinforced concrete box—permitted as alternates in the city's design plans, will be installed in the four sewer units.

MUNICIPAL AFFAIRS

Sewerage and general pollution problems claimed the attention of public authorities last week in cities in Connecticut, Philadelphia, Akron, and Albuquerque.

In Connecticut, Director Richard Martin of the State Water Commission will appoint a committee to study pollution problems in towns and cities. Consideration will be given to federal, state or other financial aid for communities to build new or expand old facilities for sewage dispsoal.

It is estimated $28,000,000 will be needed to build facilities in 40 communities.

Present laws permit towns and cities to issue sewer revenue bonds which are paid for by assessments on property owners, but commission records show that no community in Connecticut has yet issued sewer revenue bonds to build sewer systems or treatment plants.

The largest sources of raw sewage are: Bridgeport, 28 mgd.; Waterbury, 12 mgd.; New Haven, 3½ mgd.; Ansonia, 3 mgd.; East Hartford, 2½ mgd. Thirty-four cities and towns operate plants treating 121 mgd., private plants 500,000 gallons, and state institutions treat 2 mgd.

Philadelphia will increase sewer rental charges by 16 percent to finance its present sewerage construction program. This action comes close on the heels of two increases in water rates to supply additional revenue for a water works program. Mounting costs and a private home building program surpassing what city officials had originally expected have forced the rate rise.

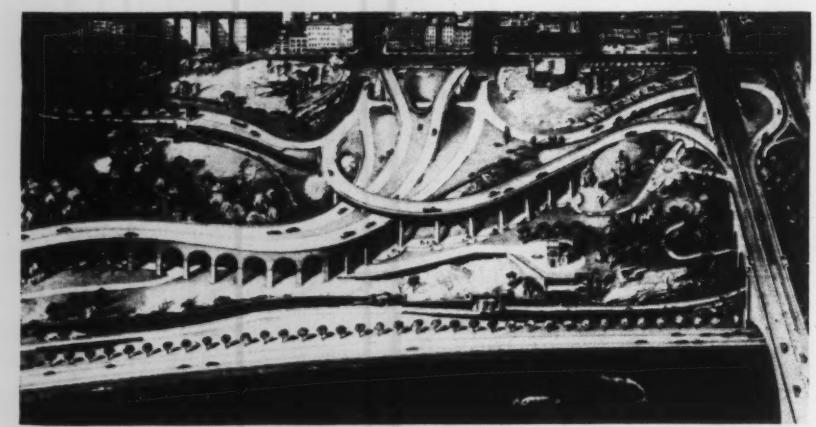
Thomas Buckley, Public Works Director, Samuel S. Baxter, assistant chief of the Bureau of Engineering Surveys and Zoning and Herman Schwartz, assistant city solicitor, said the formula for the increase, to be spread over a five-year period, will be embodied in an ordinance to be submitted to City Council.

Buckley disclosed that Philadelphia has spent $12,000,000 on sewer extension instead of the $4,000,000 planned eight years ago in a $42,000,000 program authorized by the voters. He added that $60,000,000 is needed for sewage treatment compared to $38,000,000 earmarked for that purpose in the 1940 program.

The enlarged sewage disposal plant of Akron, Ohio, may be operating at full capacity by the time its $8,000,000 improvement is completed. A study of the program by the Chamber of Commerce indicates it will be 1960 before the construction work is completed, and the enlarged and improved plant is operating fully. At that time, it is said, the city is likely to have 67,500,000 gpd. of sewage to dispose of—the full capacity of the plant.

City commissioners of Albuquerque apparently have reached a compromise on issuance of revenue bonds to finance a program of sewer and water system improvements. A 10-year program to cost about $10,000,000 at present prices, was recommended two months ago by Hasie and Green, Lubbock, Tex., engineering firm, in a "master report" on the Albuquerque municipally-owned water and sewer systems. The firm recommended financing of an immediate $3,000,000 emergency program with a 10-year revenue bond issue, and the remainder with general tax-obligation bonds. Refusal of two of the five commissioners stalemated for two months the start of the program, since state law requires a three-quarters vote of the commission in favor of a bond issue.

The compromise for the emergency program provides for issuance of $1,590,000 in 20-year revenue bonds immediately, and an additional $1,410,000 in six months, if four of the commissioners then vote affirmatively. Omitted from the emergency program, until and unless the remaining revenue bonds are voted, will be expansion of the systems into newly-annexed areas of the city. Validity of the annexation of two such areas is now being challenged in court actions by taxpayers of the two suburban communities.



TRICKY TRAFFIC INTERCHANGE, planned for the Cross-Bronx Expressway in New York City, will funnel traffic into the tunnel approaches to the George Washington Bridge. The tunnel on the left is already in service and the other will soon be advertised for bids.

Fluorescent Street Lights

The Public Administration Clearing House reports that Spartanburg, S. C., is using fluorescent lights for its streets. The business district is lighted by 104 of these 60-inch 100-watt tubes, two to a pole. The fluorescent tubes give four times as much illumination as the old type of lights for the same amount of current. Under the supervision of the city electrician, installation cost about $35 per light and $25 for each concrete pole. Walterboro, S. C., also is installing fluorescent lighting in its downtown area.

State Aid for Cities

Virginia municipalities may now turn to the state for traffic engineering studies are offered at actual cost. The highway department furnishes the engineering personnel, and the city pays for any additional help needed. For a comprehensive survey such as was made recently in Richmond, the project often is financed jointly.

The engineering service extends to all city streets and to all phases of street transportation, including parking, traffic control, enforcement, and legislation.

During the last year the highway department conducted full traffic and parking studies in four Virginia cities and made smaller-scale surveys in a number of others.

Studies have ranged from city-wide traffic and parking surveys to traffic control at a single intersection.

San Francisco Subway

San Francisco's Mayor Elmer Robinson has set next July at the latest as the starting date for engineering designs for a Market St. subway, and November, 1950, for submission of a bonding program to finance the project.

The cost of the subway, as proposed by Charles E. De Leuw, transit consultant for the city planning commission, would be between $30,000,000 and $50,000,000. In a preliminary report, De Leuw recommended a subway linking the Bay Bridge terminal with a St. Francis Circle terminal via the Twin Peaks tunnel. He also advised construction of a series of freeways: two major north-south routes, one east-west freeway and a freeway loop around the downtown district.

Building Code Matters

Miami, Fla., is considering an ordinance to appoint a building code revision committee and the preparation of a new building code.

Other developments in building regulation included:

A new code to follow closely the Southern Building Code is being proposed at Winter Haven, Fla.

An ordinance has been introduced in the city council of Cleveland, Ohio, whereby building contractors operating in Cleveland will have to obtain a city license which could be revoked for any of a number of malpractices such as violation of the city building code.

A charter amendment approved recently in Cleveland, would authorize the establishment of a five-man Board of Building Standards and Building Appeals, comprising an architect, structural engineer, mechanical engineer, experienced builder, and a member of a building-trades union. Initial appointments will be for staggered terms of one to five years, with five years each thereafter.

The new board will settle questions of building materials, types of construction, appliance and appurtenances proposed for use under the city's new building code, now nearing completion. It also will decide appeals from regulations of the code, except those relating to zoning. Zoning problems remain under the jurisdiction of the present Board of Appeals, which becomes a Board of Zoning Appeals.

Housing Progress

The Wilmington, Del., city council has revised its zoning ordinance to create two types of apartment districts in five areas of the city and to increase the permissible height to 15 stories.

Housing action elsewhere included:

San Diego, Calif., has been advised by the Federal Housing and Home Finance Agency that action will be started soon to dispose of permanent war housing in that city. The first sale on a large-scale probably will be the 499-unit Challar View project to the Navy for its personnel.

Favorable judicial decisions have opened the way for construction of a $5,000,000 rental project of 600 units on a section of Westover Hills, Dover, Del.

The National Association of Housing Officials estimates that by next year cities will have provided the major share of the funds for 60,000 new dwellings. Among the cities mentioned in the report are New York, Chicago, Minneapolis, Minn., Madison and Milwaukee, Wis., and Providence, R. I. Among states aiding cities in housing matters are New York, Massachusetts, New Jersey, California, Connecticut, New Hampshire and Ohio.

SUDS FOR STREET CLEANING—Downtown San Francisco streets got a novel suds bath in a recent demonstration of a new solvent made from petroleum. A regular city water sprinkler was used. After a foam of suds was created, a crew with brooms and shovels swept up the loosened dirt, and then another sprinkler flushed the area. A similar experiment in New Rochelle, N. Y., was described in *ENR*, May 20, vol. p. 745, where the synthetic organic detergent "Nacconal" NR of the National Aniline Division of the Allied Chemical and Dye Corp. was used.

Municipal Briefs

A demonstration has been made at Fort Wayne, Ind., of the "Road-A-Scope", a device which uses mirrors to give drivers vision around blind corners and over obstructions. Advertising space below the mirrors would be sold to pay the cost.

The city council of Bluffton, Ind., has approved an ordinance setting up a 7-man city plan commission.

Dallas, Tex., has sold $3,340,000 worth of bonds to start a $38,000,000 program of improvements for the next two years.

In Milwaukee, Wis., the examining committee of the board of estimates has approved, tentatively, a budget of $8,999,000 for the long term improvement fund. Of this amount $1,000,000 will be set aside for housing use.

On the ground that the 5-cent parking meter fee is penalizing Boston, Mass., shoppers in the suburban districts, the traffic commission is to be asked to reduce the rate to one cent an hour in those districts.

The U. S. Supreme Court ruled Oct. 25 that it had no right to interfere with plans to construct an underground garage beneath the Common at Boston, Mass. A Lowell and a Cabot were included in the group of taxpayers which appealed to the Supreme Court from a hostile ruling of a Massachusetts court.

Tampa, Fla., is preparing to lay about 80 miles of new water mains in its $3,500,000 waterworks expansion program.

City engineers of Dayton, Ohio, are studying Architect Ellason Smith's plan to make a double-decker out of the Dayton View bridge to relieve the city's bridge shortage.

Billerica, Mass., will never have a smoke nuisance as far as the big car shops of the Boston & Maine RR are concerned, as the railroad recently completed a very tall stack for its power house. It is equipped with a fly ash arrester, a spiral metal device which causes most of the soot and ash to drop back into a container at the base from which it is sucked back into the boiler fires to be reburned.

MEN AND JOBS

Lt. Col. Karl N. Pattee, executive officer of the New England Division, Corps of Engineers, for the last two years, has taken a civilian assignment in New York City. He will head the Military Supply and Procurement Office for the Chief of Engineers at 111 East 16th Street. Prior to assuming his duties in Boston, Col. Pattee was district engineer of "Hump" airfields in the China-Burma-India theater, and base engineer in Calcutta. Before going overseas he was responsible for the completion of five major construction projects in this country. He attended the University of Maine and has completed special engineering courses at Pratt Institute and the Massachusetts Institute of Technology.

Harry S. Stanton, of Wilmington, Del., who had charge of many E. I. du Pont de Nemours and Co. construction projects, retired Oct 1, having reached the retirement age of 65. He first joined the company in 1918 and had been with it continuously since 1922. In 1947 he became district superintendent of construction in the Wilmington area. From 1938 to 1943, he was field project manager in charge of major construction at the Chambers Works, Deepwater Point, N. J. During the remaining war years, he was special assistant to the manager of the war construction division in the DuPont engineering department. Mr. Stanton received his bachelor of science degree in civil engineering at the Pennsylvania State College in 1908 and the degree of civil engineer in 1914.

Sol Ellenson, left, director of public works at Newport News, Va., chatting with the new president of the American Public Works Association, William A. Xanten, who is superintendent of the division of sanitation, Washington, D. C.

Interested in the formation of the new 826th Engineer Aviation Battalion sponsored by the Florida West Coast Chapter of the A.G.C. are, left to right, seated: James F. Wishart, director; Col. R. G. Howie, C. O. Florida Military District, Jacksonville; R. E. Clarson, president Florida West Coast Chapter A.G.C.; H. W. Tarkington, Colonel senior instructor Florida Military District; J. L. Cone, director. Standing: Capt. Vaughn Evans, Military Instructor Tampa Military District; J. C. O'Brien, Lt. Col. Engr. Res. new C. O. of 826th Engineers Aviation Battalion, St. Petersburg contractor. G. M. C. Lucas, Capt. Engr. Res., acting executive officer 826th Construction Engineers, Tampa; Stanley Jones, representing A.G.C. director Fieland; and Al Mariani, Capt. Engr. Res., acting S-2 of the Battalion.

Ernest E. Howard, of the consulting engineering firm of Howard, Needles, Tammen & Bergendoff, returned to his home in Kansas City Oct. 18 from a several weeks visit to Europe. He attended the Congress of the International Association for Bridge and Structural Engineering at Liege, Belgium, to which he had been appointed the official American delegate for the U. S. Council of the association. He also attended the London conference of representatives of engineering societies of Western Europe and the United States, to which William N. Carey, secretary, American Society of Civil Engineers, was also a delegate. Other Americans attending the Liege structural engineering meeting were Eric L. Erickson and George S. Vincent of the Public Roads Administration, and L. Coff, consulting engineer, New York.

Claude H. Jackson has been appointed resident engineer for the Bureau of Reclamation on a Columbia Basin pumping plant project awarded to Morrison-Knudsen Co., Inc., and Peter Kiewit Sons' Co. for $13,348,419. He has been with the bureau since 1921, since 1935 at Grand Coulee Dam.

Frank Karnik is the new highway engineer for Walsh County, N. D.

Lloyd Cowan has resigned as engineer of Shawnee City, Okla., to take a civil service post at the Enid Army air base. His assistant, Tom Collins, has been named acting engineer.

William Richards, engineer with the Memphis, Tenn., district of the Corps of Engineers since 1921, has been named chief of the special studies and reports branch.

Harold Gibson has resigned as engineer of Cowley County, Kan., at Winfield to become city engineer of Wellington, Kan.

Ohio engineers scorn competitive bids

Nine nationally known consulting sanitary engineering firms registered their disapproval of competitive bidding for engineering engagements when, on Oct. 28, they refused to submit sealed bids for preparing plans and specifications for proposed sewage-plant extension and a new incinerator at Lima, Ohio.

Principal reason for refusing to bid on the work was that such procedure would be a direct violation of Ohio's code of professional ethics.

In its published legal notice requesting sealed bids be submitted for the work, copies of which were mailed to the consulting engineers, the city stated that plans and specifications would be based on the recommendations of preliminary studies made by Jones & Henry, consulting engineers, Toledo, Ohio. This preliminary report had been approved by the Ohio State Department of Health on Dec. 29, 1947. Moreover, Jones & Henry had, at the request of the city, made an estimate for which they would prepare the detailed plans and specifications for the two improvements. Their estimated fee included $30,000 for preparing the sewage-plant extension plans and specifications, and $16,600 for the new incinerator.

Council solicited bids

Up to this point, it is understood that the mayor was proceeding on the assumption that Jones & Henry were to be retained for preparing the plans and specifications.

But when it became evident that the City Council was determined to see if a better price for engineering services could be obtained by soliciting lump-sum bids from other consultants, the situation embarrassed those closely connected with it. As a precautionary measure against possible violation of the Ohio code of professional ethics, details of Jones & Henry's proposed fees for doing the work were published in the local papers, prior to the date set for receiving bids.

Thus the nine consulting firms were made cognizant of the fact that Jones & Henry not only had made the preliminary studies of the proposed improvements but also that, acting in good faith, they had followed up with an estimate for completing the job. Consequently, all nine firms not only refused to bid on the work but also recommended that Jones & Henry be retained for the job.

Restriction of the code

Specifically, the code of the Ohio Society of Professional Engineers states: "It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any professional engineer or surveyor to attempt to supplant another engineer or surveyor after definite steps have been taken towards his employment". . . . "It is unethical for an engineer knowingly to compete with another engineer for employment on the basis of professional charges. Any offer of professional service should be on the basis of his regular fees."

Latest report is that the city is going ahead with the preparation of detailed plans and specifications for its sewage treatment plant extension by Jones & Henry on their lump-sum estimate of $30,000. No decision reportedly has been reached by the city on proceeding with the plans for its new incinerator.

Survey supply of young civil engineers

(*Continued from p.* 5)

engineering graduates in the belief that their training in careful evaluation of data, thorough investigation of essentials and schooled attention to detail make them good executive material.

It is possible, of course, that present conditions of high employment and relatively higher pay may change the percentage figures somewhat. For example, the Engineers Joint Council in 1946 reported that the median salary for a civil engineer graduate with one year's experience was $243 per month. Today, that salary would be a good average of starting salary for men just out of school.

But educators and industry leaders seem agreed that the main fault is with the industry itself and all its branches —it does not make itself attractive to the new graduate on a personal basis.

This is reflected in reports by the American Society for Engineering Education, which show a steady decline in popularity of civil engineering courses in comparison with other engineering subjects.

One correspondent pointed out that enrollment in the West and Mid-West, where students have seen the great, dramatic dam projects and much other engineering work, is far higher than in the East where such works are less in evidence. As a corollary, the registration in civil engineering in the eastern schools is less than in other branches that lead toward the more visible manufacturing industries.

Service in governmental agencies, particularly, has been clouded by the repeated claim that any such service offers security, but dull, unappetizing work. Yet, as a number of the school men pointed out, some of these agencies offer very great opportunities for men of ambition, vision and ability.

Many individual branches of the construction industry have assessed their own needs and shortcomings—and their findings fall in with this judgment. A committee report to the American Railway Engineering Association, submitted in 1948, for example, does not hesitate to point out that most railroads can blame their engineering manpower shortage on their own lack of programs for recruitment, training and advancement, in addition to a slightly lower pay scale.

State highway officials—currently among the most harassed by technical personnel shortages—have long recognized that the lower pay scales for this work are only part of the answer. The rest is contained in making the work attractive.

"The youngsters must be convinced," one educator remarked, "that there is drama, rewarding work, and some measure of security in the construction field. Too many have heard the story that, as engineers, they will be continually working themselves out of a job."

ASTM sets specifications for bituminous paving

New tentative specifications covering bituminous paving plant requirements (D 995) have been established by Committee D-4 of the American Society for Testing Materials. These requirements previously were contained in each of two specifications—Hot-Mixed, Hot-Laid Asphaltic Concrete Base and Surface Courses (D 947), and Asphaltic Mixtures for Sheet Asphalt Pavements (D 978).

At present there is only one specification covering preformed expansion joint filler for concrete (D 544). The existing specification does not include a filler of the bituminous type. It was deemed advisable to propose a separate new specification for a bituminous type joint filler because of the differences in composition which have necessitated setting up different requirements (except as to compression requirements) than those in the existing specification. The designation D 994 has been assigned.

OBITUARY

A. G. Bouton, 62, highway commissioner of Scarsdale, N. Y., for the last 24 years, died Nov. 11. He was educated at the College of the City of New York, New York University, and Cooper Union. In the first world war he was a major of the 303d Engineers. He had been in charge of highways for the Borough of Richmond, N. Y. City, and had served as consulting engineer on highway construction in Cuba, Argentina, Uruguay and Brazil until he was appointed to the Scarsdale position. He was active in the American Legion and had been N. Y. State Commander.

Robert Charles Merritt, 82, of Wilmington, N. C., former district engineer in charge of the Wilmington District, U. S. Army Corps of Engineers, died Nov. 5. He was connected with the Wilmington district office for 53 years, and served as district engineer of the office from September, 1917 to March, 1919, being the only civilian engineer ever to hold the office. During most of his period of service he served as chief engineer.

Martin H. Luecke, 65, Fort Wayne, Ind., died Nov. 2. He was chairman of the Good Roads and Rural Development Bureau, and chairman of the state Trails Association. He laid out, established, and marked 50 trails in Indiana.

George S. Bradley, 53, a civil engineer who had lived in Kansas City, Mo., for 40 years, died there Oct. 29.

John G. O'Donnell, 59, civil engineer of Quebec, Que., died there Oct. 31. He received his degree in civil engineering at McGill University, Montreal, in 1916. He held several important engineering positions, including one with the National Shipbuilding Corp. of Three Rivers, Que., as engineer in charge of the construction of shipways; and with the Jos. Gosselin Co., Ltd., general contractors, of Quebec, as chief engineer.

Prof. Abram Lighthall, 69, leading Canadian authority on land surveying, and professor emeritus of the University of British Columbia, died at Vancouver, B. C., recently. He was graduated from McGill University in 1908 and spent several years in survey work in many parts of Canada. He was appointed to the University of British Columbia civil engineering department in 1920 as a field assistant. He became assistant professor of civil engineering in 1920 and associate professor in 1940. In 1945 he retired and in 1946 was appointed professor emeritus.

Llewellyn D. Davenport, 63, died Oct. 10 in Santa Barbara, Calif. He was formerly chief mining engineer for the U. S. Steel Corp. in the Mesabi Range in Minnesota, and helped make the survey for the Cachuma Dam before the war. He went to Japan in 1921 to develop mines and resources for the Southern Manchurian Railroad.

William F. Sherman, 57, civil engineer and former underwriting supervisor for the Federal Housing Administration, died in Washington, D. C., Nov. 7. He served a tour of duty with the Army Engineers in Washington before World War I and entered private contracting work. He returned to the War Department in the early 1940s and remained there until transferring to the FHA in January, 1947. Mr. Sherman was employed with Criss Brothers, an ornamental iron firm, and as an estimator for Walter B. Avery, Washington contractor, since leaving the FHA last September.

New assignment given to Seabee organizer

Capt. John R. Perry, who directed organization of the Seabees at the beginning of World War II, has been appointed assistant chief for operations in the Navy Department's Bureau of Yards and Docks.

Director of administration and personnel when the Seabees were authorized, Captain Perry had initial charge of the program that boosted the organization from one officer and 99 men in December 1941, to 10,187 officers and 247,000 men in July, 1945.

He succeeds Capt. W. O. Hiltabidle, recently named chief inspector of the Bureau of Yards and Docks, who replaces Capt. T. A. Hartung, who has been assigned district civil engineer for the Third Naval District, with headquarters at New York City.

Hydraulics leader gets award of Fritz Medal

Cited as "the founder of a notable hydraulic laboratory; prominent teacher, consultant, inventor and author", Charles Metcalf Allen has been awarded the 1949 John Fritz Medal for scientific achievements.

Allen is professor of hydraulic engineering at Worcester Polytechnic Institute and director of the Alden Hydraulic Laboratory at Worcester, Mass.

Professor emeritus since 1945, he has been associated with Worcester Polytechnic Institute, his alma mater, for over 50 years.

He is a member of the ASME, ASCE, and the Society for the Promotion of Engineering Education. He is also a past president of the Boston Society of Civil Engineers.

Develop new test method for industrial wastes

A new method to test water pollution caused by industrial plants has been developed by University of Washington engineers at Seattle, Wash., according to Prof. Richard G. Tyler, director of the research.

A Van Slyke apparatus, used for clinical tests to determine the gasses in blood, has been modified to measure the amount of oxygen remaining in water after pollution. This method is declared to be much more accurate than the chemical reaction process now in general use.

The new process is expected to be especially useful in current university investigations to reduce stream pollution caused by sulphite waste liquor from pulp mills.

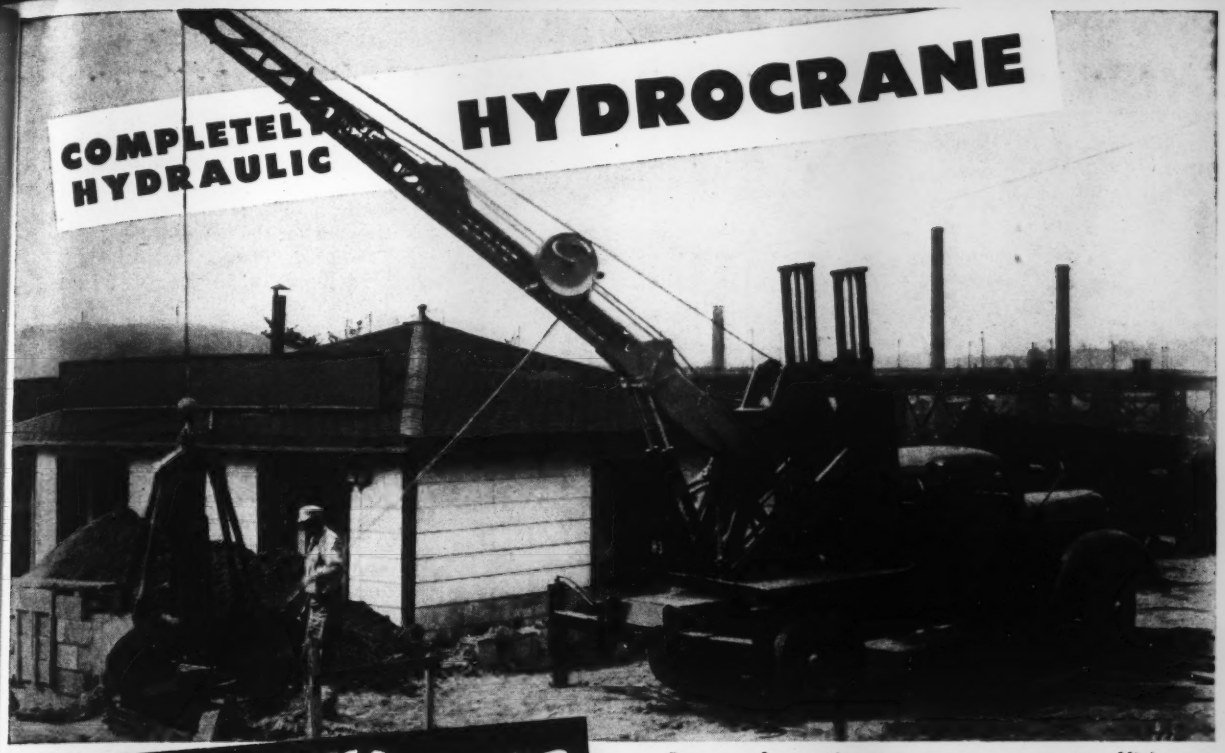
By testing samples of industrial waste with the new equipment, it is possible to predict accurately how much oxygen will be consumed when the waste is discharged into the stream, Professor Tyler said.

U. S. spent $900 million on roads in 9 months

Highway construction awards by the 48 states and the District of Columbia during the first nine months of 1948 slightly exceeded $900,000,000 and involved more than 8,000 projects with a total length of nearly 33,000 miles.

Federal funds in the nine-month total topped $307,000,000 and equaled 53 percent of all money committed to Projects that get federal help—in whole or in part. These projects added up to nearly $580,000,000. State awards of projects financed without the aid of federal funds totaled more than $320,000,000.

Measured against the gross value of state awards—$900,000,000 plus—the federal contribution represented 34 percent. In the gross figure, a little more than $41,000,000—or 4½ percent—was for force account work on some 1,800 projects, as contrasted with nearly $860,000,000 in 6,250 projects awarded to contract.



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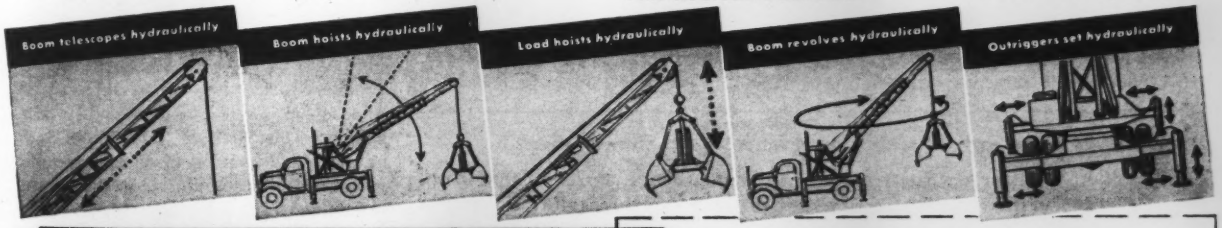

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NEW PRODUCTS

CUSTOM-BUILT pile driver will sink piles at any batter. Here is a crawler rig designed specifically for pile driving.

A fleet of ten crawler rigs built especially for driving piles has been made to order according to Raymond Concrete Pile Co. design.

Specifications called for a steam-engine crawler outfit, fully mobile, collapsible for shipment and capable of driving battered piles. The result was an oil-fired rig equipped with a reversing valve for rotation in either direction. Standard equipment includes a steam-powered generating plant for lights and a gas-powered compressor for atomizing fuel oil until sufficient steam pressure is generated to do the atomizing.

Lower base and rotating base are of all-welded steel construction. At the rear of the rotating base are two retractable arms capable of carrying an additional 8-ton counterweight. Two similar steel arms reach forward of the front end and act as anchors for guy wires which will prevent boom and leads from toppling backwards.

At the top end of the boom the 64-ft. leads hang by a swivel which allows universal positioning. The leads, which are extensible, are braced at lower end against the front end of rotating frame.

The new rig, easily dismantled for rail shipment, has been built by H. O. Penn Machinery Co., New York, N. Y.

New sewage treatment equipment shown at FSWA meeting

New equipment for sewage treatment, and construction and maintenance of sewer systems, displayed in manufacturers' exhibits at the recent Federation of Sewage Works meeting included the following—all reported as having been introduced on the market during the past few months.

Comminutor, Model 15 A.C., 2.3 mgd. maximum raw sewage capacity, 16½ cycles per min., driven by ¾-hp. electric motor. Sewage flows straight through the vertical comminutor screen, requiring no special channel construction for installation. Also a 4x3-in. single-acting sludge pump, 10 gpm. under 35-ft. head, 1/3-hp. electric motor, developed primarily for sewage plants serving about 500 persons. Worthington Pump & Machinery Co., Harrison, N. J.

Combination boring and turning machine for complete mechanical rodding of sewers. Mounted on 3-wheel, rubber-tired trailer it comes equipped with 750 ft. of flexible-joint rod and cork-screw augers in sizes from 2 to 12-in. dia. Powered by a 5-hp. air-cooled motor, the cleaning auger turns up to 85 rpm., with maximum rod travel of 90 ft. per min. Manufacturer claims that this machine, with one operator and a helper can rod sewers up to 12 in. in diameter at a cost of 3 cents per lin. ft. of sewer. Flexible Sewer Rod Equipment Co., 9059 Venice Blvd., Los Angeles, Calif.

Quadruple-gear motor for use in sludge collectors with reduction ratio of 866 and efficiency of 94 percent. Currently 72 of these units are being manufactured for the new Northeast Sewage Treatment Plant, Philadelphia, Pa. Link Belt Co., 307 N. Michigan Ave., Chicago, Ill.

Hydraulic overload release coupling for installation between motor and speed reducer for sludge collector drives. It acts as a flexible coupling and replaces the ordinary coupling attached with shear pin. Also a hunting-tooth sprocket with chain-saver rim. By incorporating one-half pitch in tooth spacing, teeth are subjected to only 50 percent contact and one-half the wear involved in the conventional sprocket-and-chain arrangement. Jeffrey Mfg. Co., 925 N. 4 St., Columbus 16, Ohio.

"Riblock" gasket for prevention of infiltration of soil and sand in the joints of gravity sewer lines. It is a flat, corrugated rubber gasket with flange that fits over shoulder of spigot-end of pipe. It comes in all conventional sizes of sewer pipe and is specifically not recommended for pressure pipe. Lock Joint Pipe Co., P.O. Box 21, Ampere, N. J.

Diffuser tube for aeration of sludge, incorporating a stainless steel core, wound with "Saran"—a synthetic plastic material which is said to not absorb moisture and to retain its elasticity. These tubes have been installed in five activated-sludge plants to date. Chicago Pump Co., 2336 Wolfram St., Chicago, Ill.

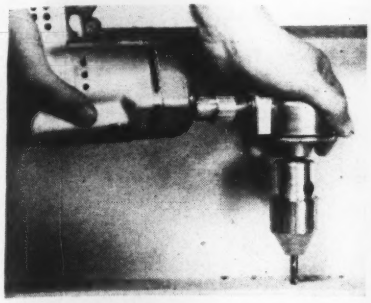
Portable Electric Drill

A new Thor 7-lb. portable electric half-inch "Silver Line" drill is announced. It is designed for continuous, stall-free drilling through toughest metals. This ½-in. drill has a highly polished, mirror-like die casting case, a free speed of 500 R.P.M., full ball-bearing construction, removable dead handle, steel bearing inserts, removable switch handle for simple service, precision gearing, 3-jaw Jacobs key type chuck. The drill's length is 11 in.—Independent Pneumatic Tool Co., 175 State Street, Aurora, Ill.

Wheelbarrow Scale

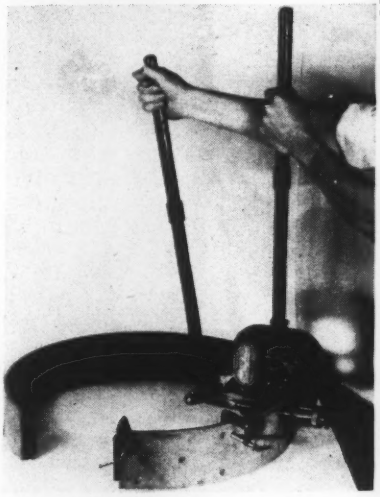
A new wheelbarrow scale has a weighing capacity of 1,000 lb. per beam, graduated in one pound increments. The tare poise is located near the tip-end of the main beam, thus facilitating the weighing operation. The weigh-beams are notched to assure proper location of the poises. All pivots, bearings and loops are scientifically heat treated. The pivots are plated, thus

protecting them from the elements and assuring many years of accurate weighing. This scale is made with two or three ingredient beams, equipped with a sensitive indicator. It is now available for immediate delivery.—THURMAN MACHINE CO., 156 NORTH FIFTH ST., COLUMBUS 15, OHIO.



Right Angle Drill Attachment

With this angle-head attachment an electric drill can be used in hard-to-reach places. A specially designed ½-in. Jacobs chuck fits the bull buffer which in turn fits the chuck of any electric drill.—F. R. BERTRAM ENGINEERING CO., 3121 MAIN ST., KANSAS CITY, MO.



Riveter and Kit

This portable riveter is suitable for relining shovel, crane, drag line and tractor bands up to 10 in. in width, either internal or external, which use 7, 8, or 10 series tubular rivets. It is of sturdy construction and can be disassembled to fit in a compact box. The kit comes complete with a hand riveter, drills, counterbores, clamps, and a wrench. The drills and counterbores are made to fit any standard ¼-in. drill. The counterbores feature a gauge for setting depth of countersink, opening for chip elimination, and are equipped with pilot pins.—RAYBESTOS DIVISION, RAYBESTOS-MANHATTAN, INC., BRIDGEPORT, CONN.

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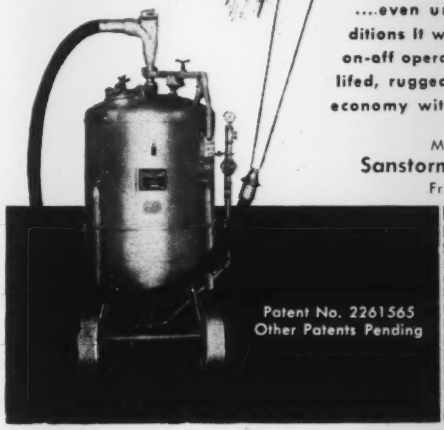

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